



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

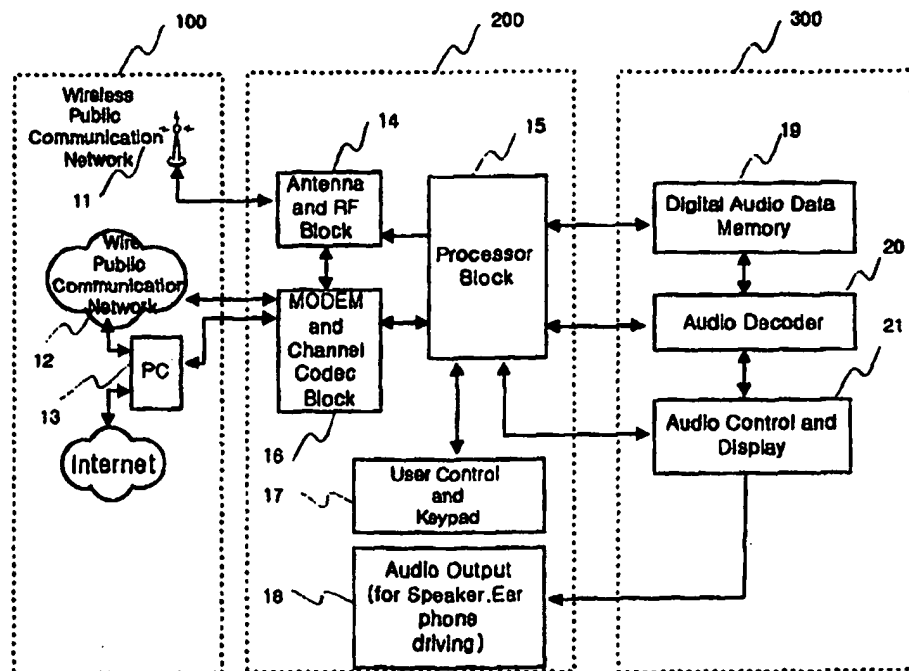
<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04B 1/40</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/38340</b> <b>(43) International Publication Date:</b> 29 June 2000 (29.06.00)
<b>(21) International Application Number:</b> PCT/KR99/00800 <b>(22) International Filing Date:</b> 22 December 1999 (22.12.99)  <b>(30) Priority Data:</b> 1998/56960      22 December 1998 (22.12.98)      KR  <b>(71)(72) Applicant and Inventor:</b> KIM, Jaehan [KR/KR]; Kwangju Dong-gu, Sansudong 568-1, Duam-Town, Apt.107-1106, 501-090 (KR).		<b>(81) Designated States:</b> CN, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> <i>In English translation (filed in Korean).</i>

**(54) Title:** APPARATUS AND METHOD FOR STORING AND PLAYING BACK OF DIGITAL AUDIO DATA ON WIRELESS MOBILE TERMINAL

**(57) Abstract**

This invention presents the combining idea of the wireless mobile terminal and the digital audio data player. This invention will reduce user's inconveniency with possessing above two products. In this invention, the function of storing digital audio data encoded by MP3 or AAC into the memory and the function of decoding the data to decoded original audio signal are added to a wireless mobile terminal. And using various methods that first method is PC interfacing method to connect with Internet, second method is requesting method of the digital audio data encoded by MP3 or AAC via the public communication network or data network that is wire or

wireless channel, third method is passive receiving method of the digital audio data transmitted from station, it is stored the digital audio data encoded by MP3 or AAC into the memory, decoded the digital audio data stored in the memory to decoded original audio signal. As result, using this invented apparatus, it will be implemented convenient mobile services of telephone and audio on demand (AOD) or music on demand (MOD). The main function of the invented apparatus is wireless mobile terminal, additional function is storing and playback of the digital audio data encoded by MP3 or AAC.



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakhstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

# **Apparatus and method for storing and playing back of Digital audio data on wireless mobile terminal**

## **Technical Field**

This invention relates to combining technology of wireless mobile terminal and digital audio data player.

## **Background Art**

We want to communicate with others using wireless mobile terminal or listen to music using digital audio data player, must take two products inconveniently.

The present wireless mobile terminal for communication is consists of data transceiving function block, audio signal processing function block and control function block by keypad. And present portable digital audio data player is consists of playback module as basic function, data storage module and recording module. But there are no products providing two functions as single assembly.

Above mentioned the wireless mobile terminal includes cellular phone, PCS phone, IMT-2000 terminal, GSM terminal, wireless portable handset, hand phone and mobile phone for wireless communication of audio or data.

## **Disclosure of Invention**

Since it is added the function of storing and playing back of the digital audio data to the wireless mobile terminal by this invention, selectable usage of the digital audio player or the wireless mobile terminal is available in this invented apparatus.

In this invention, the wireless mobile terminal comprises memory for storing digital audio data, audio decoder, audio control and display module, audio signal output module. The memory for storing of the digital audio data is fixed or replaceable.

There are two method for storing of the digital audio data, first method is PC interfacing method to connect with Internet, second method is requesting and receiving method of the digital audio data via public communication network or data network that is wire or wireless channel, or passive receiving method of the digital audio data transmitted from station.

The digital audio data that are received and stored into the memory, will be decoded and played back to the decoded original audio signal using keypad operation by user's necessity.

In accordance with an embodiment of the present invention, the receiving and storing method of the digital audio data is as follows;

first, this invented apparatus is connected with public communication network via wire(12), the digital audio data are inputted to the modem block(16) by user's keypad operation(17), stored into the memory(19) by the processing of the processor block(15).

second, operation of the PC(13) connected with public communication network

via wire or Internet, provides the modem's block(16) with the digital audio data, this data will be stored into memory(19) by control of the processor block(15),

third, by the user's keypad(17), requesting and receiving of the digital audio data via the public wireless communication network, or passive receiving of the digital audio data transmitted from the audio providing station is performed, and then the digital audio data are stored into the memory(19),

fourth, the replaceable memory storing digital audio data is inserted and connected with the data interfacing connector.

The stored digital audio data by above methods will be decoded by decoder(20) and generated a audio signal to audio output(18) in accordance with the audio circuit control by the operation of keypad(17).

As result, using this invented apparatus, the mobile services of audio on demand(AOD) or music on demand(MOD) will be implemented.

### **Brief Description Of Drawing**

FIG. 1 is a block diagram showing the functional configuration of storing and playing back of Digital audio data on wireless mobile terminal.

### **Modes for Carrying out the Invention**

The storing and playing back part(300) of the digital audio data is consists of the digital audio data storage memory(19), audio Decoder(20), selecting control of

transceiving that wireless telephone function has priority over audio player in the case of detecting call signal, audio control and display(21). The processor block(15), user's controller, key pad(17) and audio output module(18) are common to be used in the function of wireless mobile terminal and audio player.

In accordance with an embodiment of the present invention, the fresh memory may be used for storing memory(19) of digital audio data. The memory types adequate for this embodiment are fixed memory, replaceable or combinational memory(19) for storing digital audio data. The MP3(MPEG-1 Layer 3) decoder, AAC(MPEG-2 Advanced Audio Coding) decoder, or MP3 and AAC decoder(20) are used for decoding of the digital audio data. The LCD display at present or LCD displaying selection menu of digital audio data is used as a display module(21). And the selected digital audio data is decoded and the audio signal is outputted to the audio output device(18) such as speaker or earphone.

The digital audio data comprises music, audio program for language education, narration and so forth that are coded by the MP3 or AAA coding algorithm.

### **Industrial Applicability**

Using this invention, it will be implemented convenient mobile services of telephone and audio on demand(AOD) by single apparatus.

## CLAIMS

1. A wireless mobile terminal including;

fixed or replaceable memory(19) for storing digital audio data encoded by MP3(MPEG-1 Layer 3) audio encoder or AAC(MPEG-2 Advanced Audio Coding) encoder; and

MP3 or AAC Decoder(20) for reading digital audio data stored in the memory and decoding the digital audio data to the decoded original audio signal.

2. The apparatus of claim 1 including;

interfacing means with PC for storing the digital audio data from Internet into the memory(19) mentioned in claim 1; and

interfacing means with public communication network (or data network) via wire or wireless channel for storing the digital audio data from Internet into the memory(19) mentioned in claim 1.

3. A Method for playing back to the original audio signal ; comprising the steps of;

interfacing with PC to connect with Internet as mentioned in claim 2;

receiving the digital audio data encoded by MP3 or AAC from Internet;

storing the digital audio data into the memory(19) mentioned in claim 1; and

decoding the digital audio data to the decoded original audio signal using the

decoder(20) mentioned in claim 1.

4. A Method for playing back to the original audio signal ; comprising the steps of;

requesting and receiving the digital audio data encoded by MP3 or AAC via public communication network (or data network) that is wire or wireless channel; or receiving the digital audio data encoded by MP3 or AAC that is transmitted from station; and

storing the digital audio data into the memory(19) mentioned in claim 1; or decoding the digital audio data stored in the memory to the decoded original audio signal using the decoder(20) mentioned in claim 1.

5. The apparatus of claim 1 comprising;

Antenna and RF Block(14) for communication function of wireless mobile telephone;

Modem and Channel codec Block(16);

Processor Block(15) for Signal Processing and Control function;

Fixed or replaceable memory(19) for storing digital audio data;

Decoder(20) for reading digital audio data stored in the memory and decoding the data to the decoded original audio signal;

Interfacing means with PC for receiving the digital audio data from Internet and storing the digital audio data into the memory;



Interfacing means with public communication network for receiving of the digital audio data via wire or wireless public telephone network (or data network) and storing of the digital audio data into the memory;

User control means and keypad(17) for the call operation of wireless mobile terminal, the data storing operation, and the playback operation of the digital audio data;

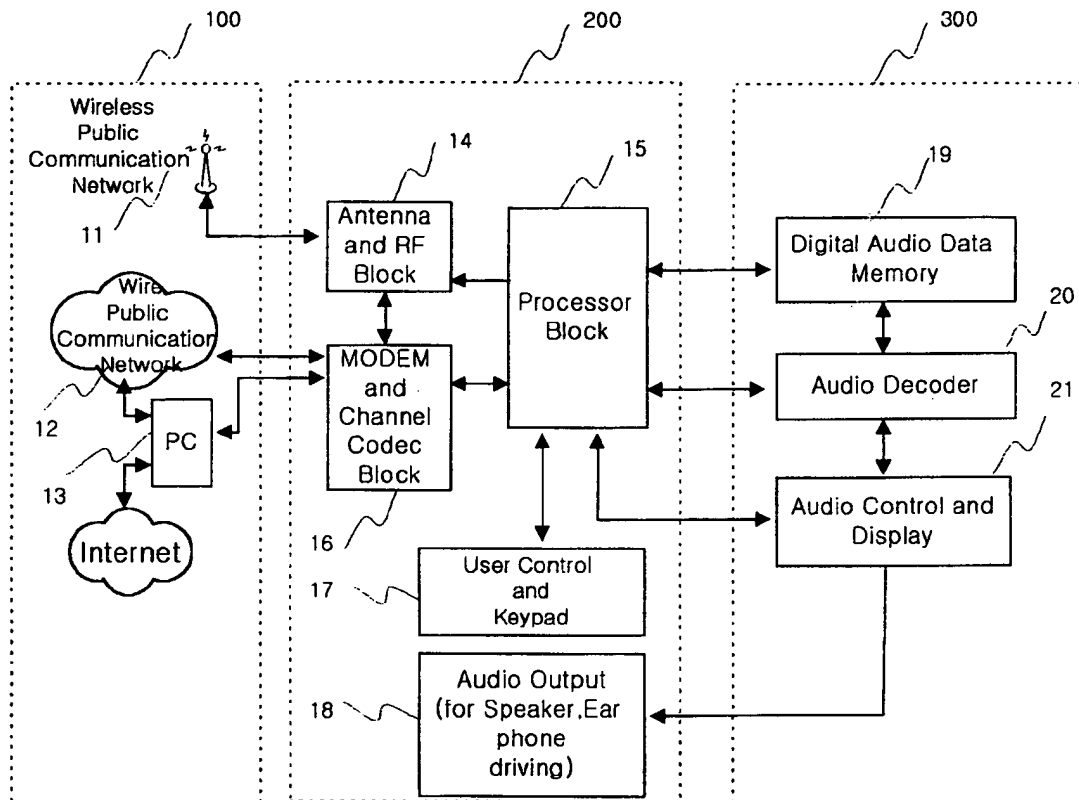
Audio control and display means(21) for control and display of wireless mobile terminal's call operation status and audio operation control status by keypad; and

Audio signal output means(18) for speaker or earphone to listen mobile terminal's voice and playback audio.

# DRAWING

1 / 1

Figure 1



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR99/00800

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7 H04B 1/40

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 H04B 1/40. H04M 1/21

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X <sub>1</sub> P	KR 99-33726 A (JOON-SUNG. KIM) 15 MAY 1999, page 3 lines 11 - lines 48	1-5
X <sub>1</sub> P	KR 99-79660 A (DANAL CORP.) 5 NOVEMBER 1999, page 3 lines 10 - lines 39	1-5
A	US 5,577,190 A (AVID TECH. INC.) 19 NOVEMBER 1996, abstract	1

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

09 MAY 2000 (09.05.2000)

Date of mailing of the international search report

10 MAY 2000 (10.05.2000)

Name and mailing address of the ISA/KR

Korean Industrial Property Office  
Government Complex-Taejon, Dunsan-dong, So-ku, Taejon  
Metropolitan City 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

KIM, Choon Seok

Telephone No. 82-42-481-5947

